ABSTRACT OF DISCLOSURE

The present invention defines an object-oriented programming model appropriate for both ASIC-based networking silicon as well as network processors. This model obtains this range of expressiveness by identifying the fundamental units of packet processing performed by underlying hardware (either ASIC or network processor). Software objects, called Stages, are then created to encapsulate and represent these fundamental units of packet processing. Using this API, a directed graph of packet flow is formed using the Stage objects. This directed graph of packet flow models packet processing performed by underlying forwarding hardware. As a result, additional services can be added or deleted from a single switching/routing device without affecting the underlying forwarding engine hardware.